PTO 03-5437 HAMT

Japanese Patent
Document No. 05-046855

LOAD CONTROL DEVICE

[負荷制御装置]

Shimamoto Akihito

UNITED STATES PATENT AND TRADEMARK OFFICE
Washington, D.C. 09/2003

Translated by: Schreiber Translations, Inc.

Bibliographic Fields
Document Identity

(19) [Publication Office]

Japan Patent Office (JP)

(12) [Kind of Document]

Unexamined Patent Publication (A)

(11) [Publication Number of Unexamined Application]

Japan Unexamined Patent Publication Hei 5 - 46855

(43) [Publication Date of Unexamined Application]

February 26th 1993

(43) [Publication Date of Unexamined Application]

February 26th 1993

(54) [Title of Invention]

LOAD CONTROL DEVICE

(51) [International Patent Classification, 5th Edition]

G07F 9/00 106 8818-3E

8-Jul

[FI]

G07F 7/08 L 8818-3E

[Number of Claims]

1

[Number of Pages in Document]

7

[Request for Examination]

Not yet requested

(21) [Application Number]

Japan Patent Application Hei 3 - 224937

(22) [Application Date]

August 9th 1991

(71) [Applicant]

[Identification Number]

1889

[Name]

SANYO ELECTRIC CO. LTD. (DB 69-053-7303)

[Address]

Osaka Prefecture Moriguchi City Keihan Hondori 2- 18

(72) [Inventor]

[Name]

Shimamoto Akihito

[Address]

Osaka Prefecture Moriguchi City Keihan Hondori 2- 18- Sanyo Electric Co. Ltd. (DB 69-053-7303)

(74) [Attorney(s) Representing All Applicants]

[Patent Attorney]

[Name]

Kawano Norio

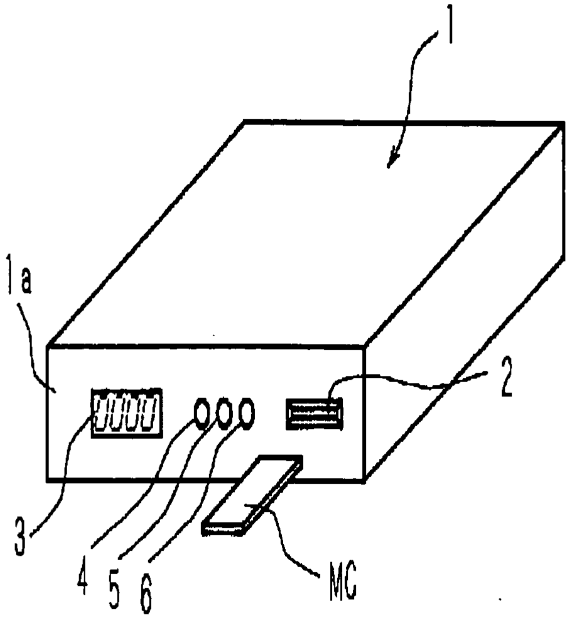
(57) [Abstract]

[Objective]

To display the improper insertion in the instances when the remainder amount has not been inserted on the card after the advanced payment of the utility charges of electronic goods has been done.

[Configuration]

A start switch 4 that sets the charging time and directs the charging, card insertion slot 2 to insert magnetic card MC that memorizes the amount to pay for the utility charge of the electronic appliances, a mean to compare the amount that was first read from the magnetic card MC and the remainder amount after the utility charge has been subtracted from that amount has been inserted on the magnetic card MC, and a display element 3 that displays the improper insertion when there is no difference between both the amounts that were read, are provided.



[Claim(s)]

[Claim 1]

A Load control device that reads the initial data that was stored in the card that has been coupled with data transmission, writes the remainder data by subtracting the specified data from the read data and controls the driving time of loading based on the specified data characterized by the fact that the first memory element that stores aforementioned initial data, second memory element 2 that stores the data read from the card after the remainder data is written and a mean to compare the data read from the first and the second memory element and if there is no difference between the compared data a mean to notify accordingly have been provided.

[Description of the Invention]

[0001]

[Field of Industrial Application]

Present invention pertains to a card that memorizes numerical data of amount etc, and to a load control device that regulates the loading time using generally known prepaid card.

[0002]

[Prior Art]

At each time of using, to collect the fare depending on the using time, for example, the electronic appliances such as paid television or paid refrigerator at a hotel are being connected to the power through loading control device.

In this load control device, a card insertion slot to insert a prepaid card that memorizes numerical data of the amount in order to pay utility charge is provided, when the prepaid card is inserted, reader and writer read the numerical data namely, the amount from the prepaid card.

[0003]

Then, if the utility charge corresponding to the utility time that is selected for the electronic appliance to be used is within the range of read amount, charging of the electronic appliance is performed in the selected utility time.

[0004]

[Problems to be Solved by the Invention]

However, regarding the prepaid card, between the signal cords of control element and reader writer, the signal cord that switches over the mode of reading and writing could be improperly connected.

In that case, data is readable but writing is not possible, from the read data, the data that corresponds to the utility charge and the subtracted remainder data to be paid in advance could not be written on the prepaid card.

[0005]

And the problem is that the inconvenience of probable use of electronic appliances without the data being written on the card is there.

In the view of these problems, this invention aims at providing a load control device that will notify the improper data writing when the data is not being written on the card.

[0006]

[Means to Solve the Problems]

The load control device pertaining to this invention that reads the initial data that was stored in the card that has been coupled with data transmission, writes the remainder data by subtracting the specified data from the read data and controls the driving time of loading based on the specified data characterized by the fact that the first memory element that stores aforementioned initial data, second memory element 2 that stores the data read from the card after the remainder data is written and a mean to compare the data read from the first and the second memory element and if there is no difference between the compared data a mean to notify accordingly have been provided

[0007]

[Operation]

Stores the initial data that was read from the card on the first memory element.

Subtracts the specified data according to the deriving time of the load from the initial data and writes the subtracted remainder data on the card.

After the remainder data is written, stores the data that was read from the card in the second memory element.

Compares the data read from the first and second memory element, and if there is no difference, notifies as prescribed.

Thus it is learnt that the data of the card is not rewritten.

[0008]

[Embodiment(s)]

Below this invention is explained with the diagrams indicating its embodiment.

Figure 1 and Figure 2 are external appearance oblique view and rear view of load control device, which relates to this invention.

The prepaid card is approaching on the right side of the front surface 1a of the rectangular case, for example, a card insertion slot 2 is provided to insert a magnetic card MC.

Also on left approaching side of the front surface 1a, a display element 3 that displays the amount of the numerical data that was read from magnetic card MC, remaining utility time of the electronic appliance that is being charged and defective data writing.

[0009]

In between the display element 3and card insertion slot 2, start switch 4 that sets the charging time for the electronic appliance and directs the charging, replacement switch 5 that directs the replacement of magnetic card MC and elimination switch 6 are provided on one line on appropriate elongation interval.

Start switch 4 can set the charging time of 10 minutes for example, in one operation cycle and the charging time could be increased depending on the number of operation cycles.

And is designed such that the setting could be eliminated in prescribed number of operation cycles.

[0010]

On one hand, on the left side of rear surface 1b of the case 1, electronic appliance terminal 7 has been provided in order to connect the electronic appliances such as television, refrigerator electrically that should control charging. Towards the left side, power source cord PC that connects the load control device to power supply has been derived.

This power source cord PC is connected to electronic appliance connection terminal 7 through a relay interface of relay 9 that is not shown in the drawing.

[0011]

Figure 3 is a block diagram, which shows circuit configuration the of load control device.

Start switch 4 and replacement switch 5 are connected onto the input port a_0 and a_1 of controlling part 20 that houses computing part 20a and 20b which are comprised of microcomputers, on the input port a_2 elimination switch 6 has been connected.

Display part 3 has been connected to the output port b_0 of controlling part 20; on the output port b_1 controlling part 8 has been connected.

Relay control part 8 is connected with relay 9, and the relay interface, which is not shown in the diagram, is made such that it will regulate switching.

[0012]

Power source cord PC has been connected to electronic appliance connection terminal 7 through the relay interface that is not shown in the diagram.

Reader-writer 10 that reads and writes the data from magnetic card MC has been connected onto the one input/output port I_1/O_1

The other one input/output port I_1/O_2 bears the first area 11a and the second area 11b for storing the read data. In addition, a memory part 11 that possesses a area which is not shown in the diagram and memorizes the data of the utility charges for the consumption time of the electronic appliances

[0013]

The operation of the load control device that is configured as below will be explained with figure 4 and 5 that show content of control of the controlling part.

First, connect a paid television (not shown in the diagram) for example, which has to be charged to the electric appliance connection terminal 7; connect the power source cord PC that is not indicated in the drawing to the power supply and make the load control device usable.

[0014]

On one hand, store the numerical data of the amount for the utility charged paid for the paid television on the magnetic card MC that is to be inserted in card insertion slot 2.

Then, in the instance of using paid television, insert the magnetic card MC that was described before in the card insertion slot 2.

Control part 20 searches for input/output port I_1/O_1 where reader-writer 10 is connected and evaluates (S1) if the magnetic card MC was inserted or not.

[0015]

If it is determined that the magnetic card MC is not inserted, searches for input port a_2 and determines if the elimination switch 6 that should eliminate the display of display part 3 operated or not (S2) if it did not operate whether to insert magnetic card MC or to wait until elimination switch 6 operates.

If it determines that elimination switch 6 operated, resets the error flag (S3) and if there is no display of improper data writing on display part 3, eliminates that display (S4) and control operation ends.

[0016]

On one hand, when it determines that magnetic card MC is inserted, determines if error flag is set or not (S5), if it is not set, reads the numerical data, namely the amount that is stored on the magnetic card MC from reader-writer 10, and stores the read amount in the first area 11a of the memory par 11.

If it is set, remove the magnetic card MC from the card insertion slot 2 and replace it (S7), and control operation ends.

When the read amount is stored in the first area 11a (S6), checks the data read from the magnetic card MC (S8) and determines if there is reading error or not. (S9)

[0017]

If it determines that there is no reading error, outputs the numerical data that the reader-writer 10 read on the output port b_0 and displays the read amount on the display part 3 (S10)

If there is error in reading, replace the magnetic card MC in the card insertion slot. (S7)

Next, control part 20 searches for input port a_0 and determines if the start switch 4 operated or not.

If the start switch 4 that should charge the paid television, operated, it reads from the area of memory part 11 that has utility charge amount for the utility time set with the start switch and that utility charge is subtracted (S2) from the amount read from the magnetic MC card and the remainder amount is written on the magnetic card MC (S13)

[0018]

After that, the remainder data that has been written on the magnetic card MC is read with reader-writer 10 (S14)

Stores the remainder amount that was read in the second area 11b of memory part 11. (S15)

Then, reads the each amount of the first area 11a and the second area 11b from the control part 20 (S16), compares the both amounts and determines if the both read amounts are equal or not.

[0019]

If it is determined to be equal, the amount from which the amount corresponding to the utility charge was subtracted was not written on the magnetic card MC, if it is the amount same as before subtracting utility charge, in other words, if the data has not been updated, set the error flag (S18)

Then, displays the improper writing due to the faulty connection of the switch signal cord of read and write (S19) on the display part 3, and replace the magnetic card MC in the card insertion slot 2. (S20)

With this kind of operation, it could be the situation where the data of the magnetic card MC cannot be updated.

[0020]

However, if it is determined that start switch 4 did not operate in a step (S11), determines if the replacement switch 5 operated or not (S21), waits until the replacement switch 5 operates and if operates, replace the magnetic card MC in the card insertion slot 2 (S22) and the control operation ends.

With this, after the magnetic card MC is inserted in the card insertion slot 2, to stop the use of paid television, the magnetic card MC could be received with the replacement switch 5 operating.

[0021]

If there is difference between the amount read from the pair of the first area 11a and the second area 11b at the step (S17), in other words, if the amount from which the utility charge has been subtracted, is written on the magnetic card MC, the utility time of the electric appliance set with the start switch 4 is set on the timer 20b (S23), outputs the signal on the output port b_1, controls relay control part 8, energizes relay 9, closes that relay interface (not shown in the drawing), connects power source cord PC to electric appliance connection terminal 7, starts the charging of paid television, which is connected to electric appliance connection terminal 7 and not shown in the drawing (S24), and operates paid television.

Then replace the magnetic card MC in the card insertion slot 2. (S25)

If the charging is started, timer 20b starts count down (S26) and calculates the set utility time.

[0022]

Then determines if the time keeping is over or not with control part 20 (S27), and the charging continues until the set utility time is over, and if its over, the signal of out put port b_1 interrupts, closes the relay interface by not operating relay 9, and controls relay control part 8, interrupts the charging of the paid television (S28), and the control operation of controlling charging of the paid television completes.

Thus, the paid television could be used only for the utility time that was set with start switch.

[0023]

Thus the amount that was read from the magnetic card MC before subtracting the utility charge, and after the amount from which the utility charge was subtracted is written on the magnetic card, if there is no difference with the amount that was read from the magnetic card, displays the improper writing.

Because of that it is possible to eliminate the inconvenience of using electric appliance without updating data of the card.

[0024]

In this embodiment a magnetic card was used as a card to store the numerical data but the same effect could be acquired even if other optical memory cards are used.

And the charging of the paid television was controlled but it is not only limited to the television and could obviously be used for the charging control of various electric appliances or flow control valve etc.

Furthermore, improper writing was displayed on the display part but it could be also be notified by using buzzer.

[0025]

[Effects of the Invention]

As described above, according to this invention, if the data cannot be written on the card, since it notifies the error in writing, the inconvenience of using electric alliance without updating the data on the card could be eliminated.

With that, a superior effect of providing a load control device, which is highly reliable and enables normal advanced payment of the utility charge of the electric appliances.

[Brief Explanation of the Drawing(s)]

[Figure 1]

It is a external appearance oblique view of the load control device pertaining to this invention.

[Figure 2]

It is a rear view of the load control device.

[Figure 3]

It is a block diagram, which shows circuit configuration of the load control device.

[Figure 4]

It is a half of the flowchart, which shows control content of control unit.

[Figure 5]

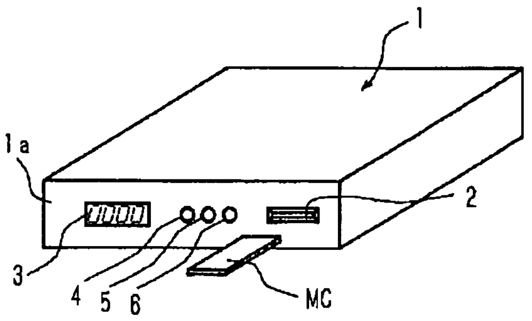
It is a half of the flowchart, which shows control content of control unit.

[Explanation of Symbols in Drawings]

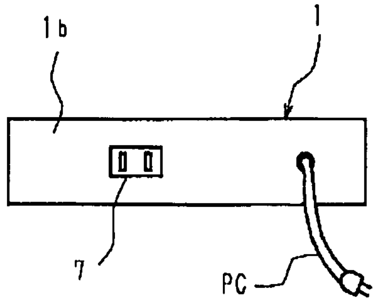
Case	1
Reader-writer	10
Card inlet	2
Display	3
Start switch	4
Return switch	5
Removal switch	6
Electric appliance connector terminal	7
Magnetic card	MC

Drawings

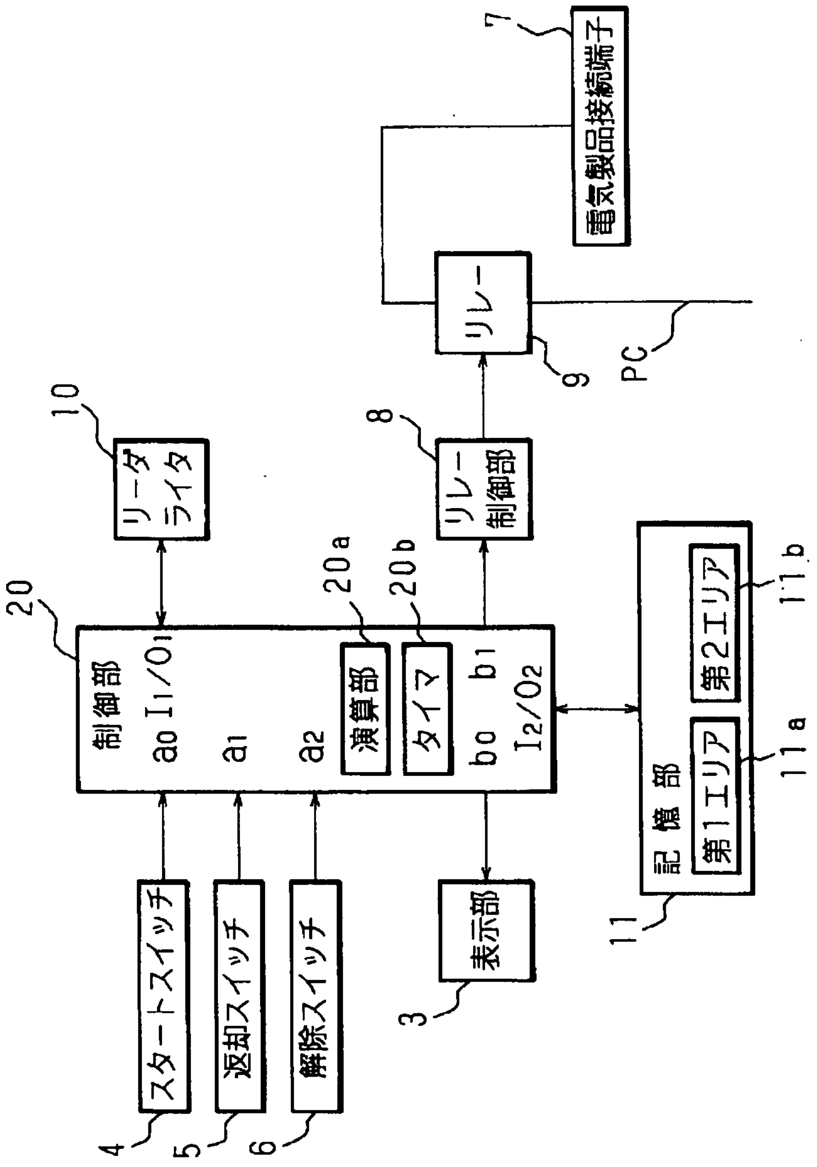
[Figure 1]



[Figure 2]



[Figure 3]


7
電気製品接続端子
リレー
9
PC
8
リレー制御部
10
リーダライタ
20
制御部
a0
I1/O1
a1
a2
20a
演算部
20b
タイマ
b0
b1
I2/O2
記憶部
第1エリア
11a
第2エリア
11b
11
表示部
3
スタートスイッチ
4
返却スイッチ
5
解除スイッチ
6

[Figure 3: Translation]

3- display part

4-Start switch

5- replacement switch

6-elimination switch

7- Electric appliance connection terminal

8- Relay control part

9- Relay

10- Reader-writer

11- Memory part

11a- first area

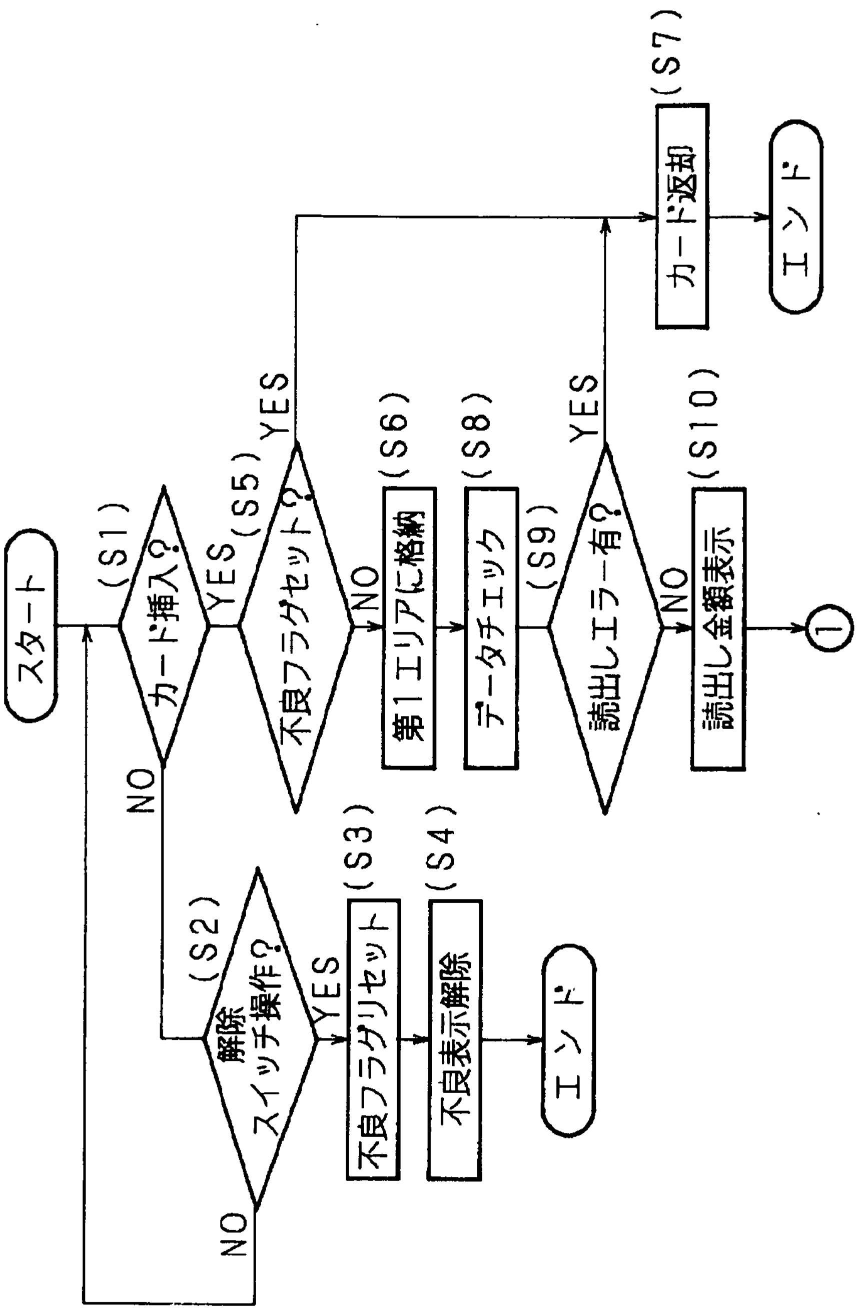
11b- second area

20- control part

20a-computing part

20b- Timer

[Figure 4]



スタート
(S1)
カード挿入?
YES
NO
(S2)
解除
スイッチ操作?
YES
NO
(S3)
不良フラグリセット
(S4)
不良表示解除
エンド
(S5)
不良フラグセット?
YES
NO
(S6)
第1エリアに格納
(S8)
データチェック
(S9)
読出しエラー有?
YES
NO
(S10)
読出し金額表示
①
(S7)
カード返却
エンド

[Figure 4; Translation]

START
S1-Card insertion?

Yes-S5-error flag set?

No- S2- elimination switch operation

Yes-S3- error flag set

S4- Improper display elimination

End

Yes-S5-error flag set?

Yes-S7- card replacement

End

No- S6-Store in first area

S8- data check

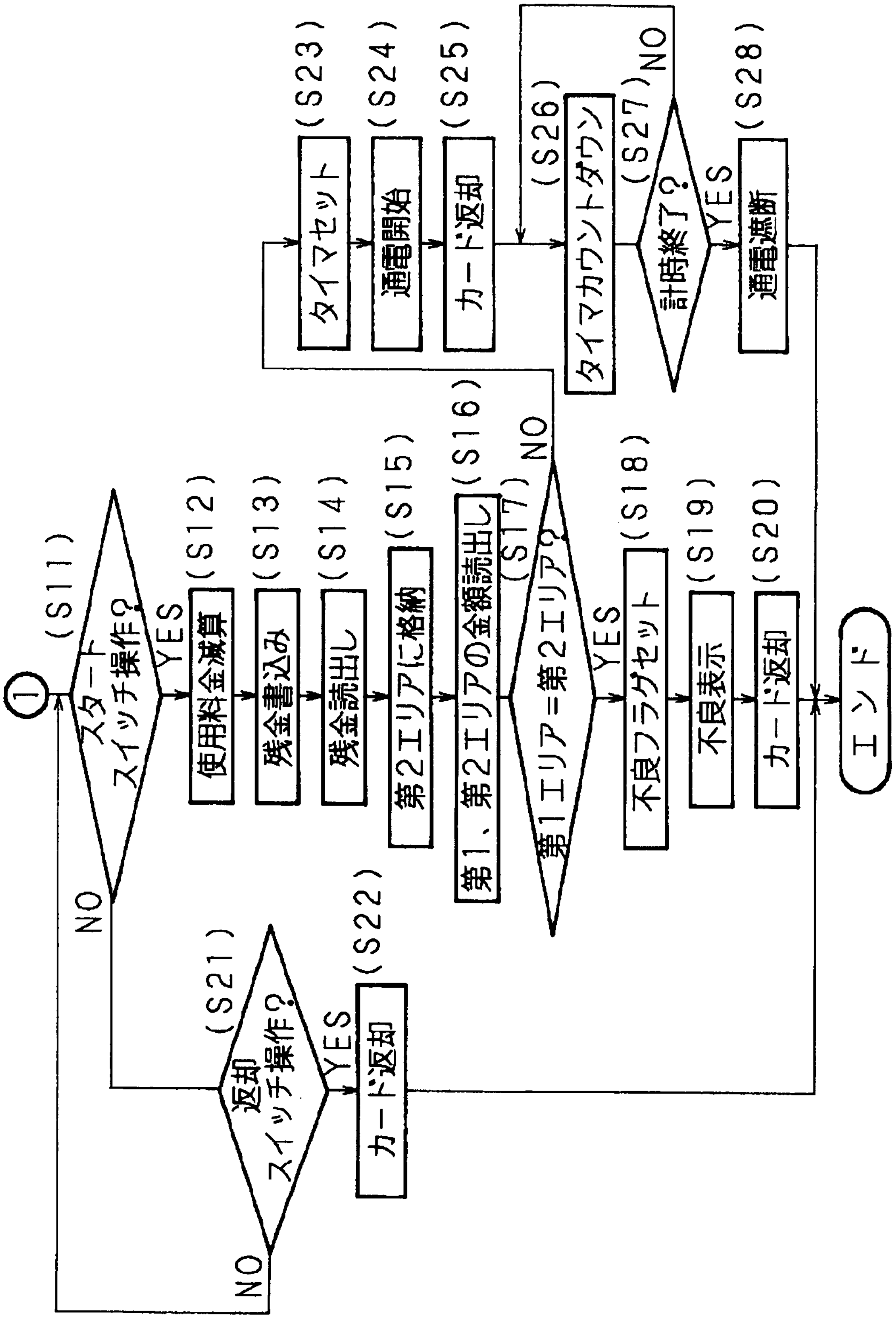
S9- Is there any reading error or not?

Yes- card replacement

End

No-S10- reading amount.

[Figure 5]


①
スタート
スイッチ操作？
(S11)
YES
NO
使用料金減算
(S12)
残金書込み
(S13)
残金読出し
(S14)
第2エリアに格納
(S15)
第1、第2エリアの金額読出し
(S16)
第1エリア＝第2エリア？
(S17)
YES
NO
不良フラグセット
(S18)
不良表示
(S19)
カード返却
(S20)
エンド
返却
スイッチ操作？
(S21)
YES
NO
カード返却
(S22)
タイマセット
(S23)
通電開始
(S24)
カード返却
(S25)
タイマカウントダウン
(S26)
計時終了？
(S27)
YES
NO
通電遮断
(S28)

[Figure 5; Translation]
S11- Start switch operated or not?

No- S21- replacement switch operated or not?

Yes-S22- Card replacement

S11- Start switch operated or not?

Yes-S12- utility charge subtraction

S13- Write remainder amount

S14- Reads remainder amount

S15- Store in second area

S16- Reads amount of the first and second area

S17- Are the amounts from first and second area equal?

Yes- S18- error flag set

S19- error display

S20- Card replacement

End

S17- Are the amounts from first and second area equal?

No-S23- Timer set

S24- charging start

S25- card replacement

Yes- S26-timer count down

No- S27-Clock end?

Yes- S28-charging interruption